

AMENDMENTS TO THE SPECIFICATION:

Please add the following *new* paragraph on page 1, between lines 3 and 4:

CROSS-REFERENCE TO RELATED APPLICATIONS

This U.S. National stage application claims priority under 35 U.S.C. §119(a) to Japanese Patent Application Nos. 2004-104539 and 2004-104540, filed in Japan on March 31, 2004, the entire contents of which are hereby incorporated herein by reference.

Please replace the paragraph beginning at page 3, line 18 with the following rewritten version:

【0011】 A first ~~embodiment~~ aspect of a motor according to the present invention includes an armature (3) and a field element (2) which are rotatable relative to each other on a rotation axis (21) extending in a first direction (L). The armature (3) includes an armature winding (7) which is placed at a distance in a second direction (D) perpendicular to the first direction (L) from the rotation axis (21). The field element (2) includes: a plurality of first yoke plates (41) each of which includes one end which faces the armature winding (7) in the first direction (L) and the other end which does not face the armature winding (7) in the first direction (L) and extends in the second direction (D); and a magnetic-field creating magnet (5) which has a north pole joined to the other end of one of adjacent first yoke plates (41) of the plurality of first yoke plates (41), a south pole joined to the other end of the other of the adjacent first yoke plates (41), and a U-shaped magnetic path (Φ 1) which opens to the plurality of first yoke plates (41), and at least locally faces the armature winding (7) in the second direction (D).

Please replace the paragraph beginning at page 4, line 6 with the following rewritten version:

【0012】 A second ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the one ends of the adjacent first yoke plates (41) are connected to each other.

Please replace the paragraph beginning at page 4, line 9 with the following rewritten version:

【0013】 A third ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the other ends of the adjacent first yoke plates (41) are connected to each other such that a junction between the other ends of the adjacent first yoke plates (41) does not overlie a boundary between the north pole and the south pole.

Please replace the paragraph beginning at page 4, line 13 with the following rewritten version:

【0014】 A fourth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which each of the plurality of first yoke plates (41) includes a linear outline (411) parallel to the second direction (D).

Please replace the paragraph beginning at page 4, line 16 with the following rewritten version:

【0015】 A fifth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which an interval (461) between the adjacent first yoke plates (41) increases as a distance from the rotation axis (21) increases in the second direction (D).

Please replace the paragraph beginning at page 4, line 20 with the following rewritten version:

【0016】 A sixth ~~embodiment~~ aspect of the motor according to the present invention is the fifth embodiment of the motor in which the interval (461) between the adjacent first yoke plates (41) non-linearly increases in proportion to the distance from the rotation axis (21).

Please replace the paragraph beginning at page 4, line 23 with the following rewritten version:

【0017】 A seventh ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the magnetic-field creating magnet (5) is disc-shaped.

Please replace the paragraph beginning at page 5, line 1 with the following rewritten version:

【0018】 An eighth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the magnetic-field creating magnet (5) includes: at least one permanent magnet (51) in which a north pole and a south pole are laid side by side in the first direction (L); and a second yoke plate (59) which joins the north pole and the south pole of the permanent magnet on a side opposite to a side on which the plurality of first yoke plates (41) are placed.

Please replace the paragraph beginning at page 5, line 7 with the following rewritten version:

【0019】 A ninth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the magnetic-field creating magnet (5) includes: at least two hexahedron-shaped permanent magnets (53) in each of which a north pole and a south pole are laid side by side in the first direction (L); and a second yoke plate (59) which joins the south pole and the north pole of each of the permanent magnets (53) on a side opposite to a side on which the plurality of first yoke plates (41) are placed.

Please replace the paragraph beginning at page 5, line 13 with the following rewritten version:

【0020】 A tenth ~~embodiment~~ aspect of the motor according to the present invention is the eighth embodiment of the motor in which the permanent magnet (51, 53) is a bonded-magnet.

Please replace the paragraph beginning at page 5, line 15 with the following rewritten version:

【0021】 An eleventh ~~embodiment~~ aspect of the motor according to the present invention is the tenth embodiment of the motor in which the permanent magnet (51, 53) is formed integrally with either the plurality of first yoke plates (41) or the second yoke plate (59) by injection molding.

Please replace the paragraph beginning at page 5, line 19 with the following rewritten version:

【0022】 A twelfth ~~embodiment~~ aspect of the motor according to the present invention is the eighth embodiment of the motor in which a width of the second yoke plate (59) extending in the second direction (D) is larger than a width of the permanent magnet (51, 53) extending in the second direction (D).

Please replace the paragraph beginning at page 5, line 23 with the following rewritten version:

【0023】 A thirteenth ~~embodiment~~ aspect of the motor according to the present invention is the eighth embodiment of the motor in which a width of the second yoke plate (59) extending in the first direction (L) is larger than a width of the permanent magnet (51, 53) extending in the first direction (L).

Please replace the paragraph beginning at page 6, line 2 with the following rewritten version:

【0024】 A fourteenth ~~embodiment~~ aspect of the motor according to the present invention is the eighth embodiment of the motor in which a portion extending along a portion of the permanent magnet (51, 53) where different polarities are adjacent has a larger width extending in the first direction (L) than the other portions in the second yoke plate (59).

Please replace the paragraph beginning at page 6, line 6 with the following rewritten version:

【0025】 A fifteenth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the armature (3) further includes a substrate (76) on which the armature winding (7) is placed.

Please replace the paragraph beginning at page 6, line 9 with the following rewritten version:

【0026】 A sixteenth ~~embodiment~~ aspect of the motor according to the present invention is the fifteenth embodiment of the motor in which the armature winding 7 is placed on each of surfaces of the substrate (76) which are opposite to each other in the first direction (L).

Please replace the paragraph beginning at page 6, line 12 with the following rewritten version:

【0027】 A seventeenth ~~embodiment~~ aspect of the motor according to the present invention is the sixteenth embodiment of the motor in which the armature winding (7) placed on one of the surfaces of the substrate (76) and the armature winding (7) placed on the other of the surfaces of the substrate (76) are misaligned with each other in a rotation direction (R) of the field element (2) which is defined based on the armature (3).

Please replace the paragraph beginning at page 6, line 17 with the following rewritten version:

【0028】 An eighteenth ~~embodiment~~ aspect of the motor according to the present invention is the fifteenth embodiment of the motor in which the armature winding (7) is a flat coil in which a conductor is formed by a photolithographic process.

Please replace the paragraph beginning at page 6, line 20 with the following rewritten version:

【0029】 A nineteenth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the armature (3) and the field element (2) are paired to form one motor set, and a plurality of motor sets are connected to be arranged in the first direction (L) while being centered on the rotation axis (21) in common.

Please replace the paragraph beginning at page 6, line 24 with the following rewritten version:

【0030】 A twentieth ~~embodiment~~ aspect of the motor according to the present invention is the nineteenth embodiment of the motor in which the armature windings (7) respectively included in the plurality of motor sets are misaligned with one another in a rotation direction (R) of the field element (2) which is defined based on the armature (3).

Please replace the paragraph beginning at page 7, line 3 with the following rewritten version:

【0031】 A twenty-first ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the armature winding (7) is placed closer to the rotation axis (21) than the magnetic-field creating magnet (5), and the field element (2) and another field element (2) similar to the field element (2) are connected to each other to be arranged in the first direction (L) with the armature (3) being interposed therebetween, while being centered on the rotation axis (21) in common.

Please replace the paragraph beginning at page 7, line 9 with the following rewritten version:

【0032】 A twenty-second ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which each of the first yoke plates (41) includes a first flat portion (41a) which forms an air gap (74) in a space between the first flat portion (41a) and the armature winding (7) and a second flat portion (41b) connected to the first flat portion (41a), and the first flat portion (41a) is placed closer to the armature winding (7) than the second flat portion (41b) in the first direction (L).

Please replace the paragraph beginning at page 7, line 15 with the following rewritten version:

【0033】 A twenty-third ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the armature (3) further includes at least one position detection sensor (6) for detecting a position of a magnetic pole of the magnetic-field creating magnet (5), and the position detection sensor (6) is placed in a substantially central region of the armature winding (7).

Please replace the paragraph beginning at page 7, line 20 with the following rewritten version:

【0034】 A twenty-fourth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor in which the armature (3) further includes at least one position detection sensor (6) for detecting a position of a magnetic pole of the magnetic-field creating magnet (5), and the position detection sensor (6) is displaced with respect to a line (d1) extending from the rotation axis (21) to a substantially central region of the armature winding (7) in a direction opposite to a rotation direction (R) of the field element (2) which is defined based on the armature (3).

Please replace the paragraph beginning at page 8, line 2 with the following rewritten version:

【0035】 A twenty-fifth ~~embodiment~~ aspect of the motor according to the present invention is the twenty-third embodiment of the motor which further includes drive means for supplying either rectangular-wave or sinusoidal drive current to the armature winding (7) based on an output of the position detection sensor (6).

Please replace the paragraph beginning at page 8, line 6 with the following rewritten version:

【0036】 A twenty-sixth ~~embodiment~~ aspect of the motor according to the present invention is the first embodiment of the motor which further includes: means for detecting an induced voltage of the armature winding (7); means for estimating a position of a magnetic pole of the magnetic-field creating magnet (5) from the induced voltage; and drive means for supplying a drive current based on the estimated position of the magnetic pole of the magnetic-field creating magnet (5) to the armature winding (7).

Please replace the paragraph beginning at page 8, line 12 with the following rewritten version:

【0037】 A twenty-seventh ~~embodiment~~ aspect of the motor according to the present invention is the twenty-sixth embodiment of the motor in which the drive means sets a phase of the drive current forward to a phase of the induced voltage.

Please replace the paragraph beginning at page 8, line 15 with the following rewritten version:

【0038】 A twenty-eighth ~~embodiment~~ aspect of the motor according to the present invention includes: an armature (3) including an armature winding (7) and a first yoke plate (31) which are stacked in one direction (L); and a field element (2) which includes a magnetic-field creating magnet (5) having magnetic poles which are laid side by side in the one direction

and are different from each other in polarity, and is rotatable relative to the armature on a rotation axis (21) extending in the one direction (L). The first yoke plate (31) includes a non-conductive part (241, 242) extending in a rotation direction (R) of the field element (2).

Please replace the paragraph beginning at page 8, line 23 with the following rewritten version:

【0039】 A twenty-ninth ~~embodiment~~ aspect of the motor according to the present invention is the twenty-eighth embodiment of the motor in which the non-conductive part (241, 242) includes a plurality of slits (241) which are arranged along a circle centered on the rotation axis (21).

Please replace the paragraph beginning at page 9, line 2 with the following rewritten version:

【0040】 A thirtieth ~~embodiment~~ aspect of the motor according to the present invention is the twenty-ninth embodiment of the motor in which the plurality of slits (241) are arranged such that at least one of the plurality of slits (241) is present in a position at every angle along the rotation direction (R) in a range between the rotation axis (21) and a periphery of the first yoke plate (31).

Please replace the paragraph beginning at page 9, line 7 with the following rewritten version:

【0041】 A thirty-first ~~embodiment~~ aspect of the motor according to the present invention is the twenty-eighth embodiment of the motor in which the first yoke plate (31) includes a plurality of magnetic plates (31a, 31b, 31c, 31d) having a boundary extending along at least one circle centered on the rotation axis (21), and the non-conductive part (241, 242) includes the boundary (242) between the plurality of magnetic plates.

Please replace the paragraph beginning at page 9, line 12 with the following rewritten version:

【0042】 A thirty-second ~~embodiment~~ aspect of the motor according to the present invention is the thirty-first embodiment of the motor in which an insulating coating is provided on the boundary (242) between the plurality of magnetic plates.

Please replace the paragraph beginning at page 9, line 15 with the following rewritten version:

【0043】 A thirty-third ~~embodiment~~ aspect of the motor according to the present invention is the twenty-eighth embodiment of the motor in which the armature winding (7) and the magnetic-field creating magnet (5) overlap each other in a direction (D) extending from the rotation axis (21) toward a periphery of the first yoke plate (31).

Please replace the paragraph beginning at page 9, line 19 with the following rewritten version:

【0044】 A thirty-fourth ~~embodiment~~ aspect of the motor according to the present invention is the thirty-third embodiment of the motor in which the magnetic-field creating magnet (5) includes a plurality of subsidiary magnets (52) each having magnetic poles which are laid side by side in the one direction and are different from each other in polarity, the plurality of subsidiary magnets (52) are arranged such that different polarities are alternately provided around the rotation axis (21) and a boundary between the different polarities extends in the direction extending toward the periphery, the field element (2) includes: a second yoke plate (2) which includes a first portion (41a) facing the armature winding (7) in the one direction (L) and a second portion (41b) connected to one side of the magnetic-field creating magnet (5) which is opposite to a side on which the armature is placed, and is placed orthogonally to the rotation axis (21); and a third yoke plate (59) which joins the different polarities provided on the side of the magnetic-field creating magnet (5) on which the armature is placed, and the second yoke plate (4) includes a non-magnetic part (46) extending in the direction (D)

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extending toward the periphery on a boundary between the plurality of subsidiary magnets
(52).

Please replace the heading at page 19, line 14, with the following rewritten version:

~~BEST MODES FOR CARRYING OUT~~ DETAILED DESCRIPTION OF THE
INVENTION

Please add the following new heading at page 52, between line 1 and 2:

WHAT IS CLAIMED IS: